

CLAIMS

1. A method to introduce a nucleic acid molecule into a mammalian subject which method comprises

5 transplanting into the dermis of said subject at least one hair follicle that has been modified *ex vivo* to contain said nucleic acid molecule.

2. The method of claim 1 wherein said hair follicle has been modified *ex vivo* in a histoculture.

10 3. The method of claim 2 wherein said histoculture has been treated with collagenase prior to modifying said hair follicle.

4. The method of claim 1 wherein said hair follicle is in anagen.

5. The method of claim 1 wherein said follicle has been modified to contain said nucleic acid molecule by transducing with said nucleic acid or by lipofection.

15 6. The method of claim 1 wherein said follicle has been modified to contain said nucleic acid molecule by treating with a viral vector.

7. The method of claim 6 wherein said viral vector comprises the supernatant of a viral packaging cell, and/or wherein said viral vector comprises a retroviral vector, and/or wherein said viral vector comprises an adenoviral vector.

8. The method of claim 1 wherein said mammal is a mouse or a human.

9. The method of claim 1 wherein said nucleic acid encodes an immunogen, or wherein said nucleic acid encodes a hormone, or wherein said nucleic acid encodes a product that affects hair growth or quality.

5 10. A histocultured hair follicle, in anagen phase, modified to contain a heterologous nucleic acid molecule.

Sub 21 11. A method to introduce a nucleic acid molecule into a mammalian subject which method comprises transplanting into the corresponding tissue of said mammal a histocultured intact tissue that has been modified *ex vivo* to contain said nucleic acid molecule.

10 12. The method of claim 11 wherein said histoculture has been treated with collagenase prior to modifying said tissue with the nucleic acid.

15 13. The method of claim 11 wherein said modifying with nucleic acid comprises treating said tissue with a liposomal composition, or wherein said modifying comprises transducing the cells of said tissue with said nucleic acid, or wherein said modifying comprises treating said tissue with a viral vector.

14. The method of claim 11 wherein said intact tissue is dermis, or wherein said tissue is lymph tissue.

Sub 22 20 15. A method of delivering a nucleic acid to a hair follicle which method comprises maintaining said hair follicle in histoculture and treating said histoculture with a nucleic acid.

16. The method of claim 15 wherein said treating with a nucleic acid is preceded by the step of treating said histoculture with collagenase.

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17. A method of delivering a nucleic acid to a an intact tissue which method comprises treating a histoculture of said intact tissue with said nucleic acid.

18. The method of claim 17 wherein said treating with a nucleic acid is preceded by the step of treating said histoculture with collagenase.

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19. The method of claim 18 wherein said tissue is skin or lymphoid.

20. A histoculture modified to contain a heterologous nucleic acid.

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21. The histoculture of claim 20 which is an intact fragment of skin or lymph node.

Case	Age	Sex	Duration (yr)	Site	Histology	Immunohistochemistry	Molecular biology	Outcome	Ref.
1	65	M	10	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[1]
2	68	M	15	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[2]
3	72	M	12	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[3]
4	75	M	18	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[4]
5	78	M	20	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[5]
6	80	M	22	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[6]
7	82	M	24	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[7]
8	85	M	26	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[8]
9	88	M	28	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[9]
10	90	M	30	Rectum	Adenocarcinoma	CD117 (+)	None	CR	[10]